

FINAL STATEMENT OF WORK
FOR REMEDIAL DESIGN AND REMEDIAL ACTION
COMMENCEMENT BAY NEARSHORE/TIDEFLATS SUPERFUND SITE
OPERABLE UNIT 02 – ASARCO TACOMA SMELTER FACILITY AND SLAG
PENINSULA
AND OPERABLE UNIT 06 – MARINE SEDIMENTS AND GROUNDWATER
RUSTON AND TACOMA, WASHINGTON

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1.0 INTRODUCTION

1.1 PURPOSE

This document sets out the Statement of Work (SOW) for Point Ruston, LLC (Point Ruston) to implement the remedial actions selected in the Records of Decision (RODs) for the Commencement Bay Nearshore/Tideflats Superfund Site, Operable Unit 02, Asarco Tacoma Smelter Facility, Tacoma/Ruston, Washington (OU2) and portions of Operable Unit 06, Marine Sediments and Groundwater (OU6). The descriptions of the remedies for these operable units are covered in their respective RODs and Remedial Designs. As the implementation of the remedial actions commence, EPA will review and potentially approve modifications to the remedial actions based on value engineering and other reviews performed by Point Ruston.

It was the responsibility of ASARCO Incorporated (Asarco) to prepare, and submit for approval in accordance with an earlier SOW, work plans and design documents for each remedial action. Point Ruston is assuming the work that Asarco was performing. Point Ruston will complete any plans which have not been finalized by Asarco and approved by EPA, and may prepare and submit for acceptance in accordance with this SOW, additional work plans and design addenda/modifications to complete the remaining remedy as outlined herein or rely on those completed by Asarco. The EPA has reviewed this SOW and has determined that work undertaken in accordance with its terms will be consistent with the National Contingency Plan (NCP).

Asarco is responsible for performing the work to implement the selected remedy. Asarco declared bankruptcy in August 2003, and sold the property to Point Ruston. Point Ruston will perform the remaining remediation tasks. EPA shall review Point Ruston's work products and schedules, and conduct oversight of Point Ruston's activities throughout the performance of the remaining work. Point Ruston shall assist EPA in conducting oversight activities.

1.2 DOCUMENT ORGANIZATION

This document is organized in the following manner. Section 1 summarizes the site history, the purpose of the SOW and document organization. Section 2 details the Remedial Design and Remedial Action activities that must be performed at the Site to satisfy the Performance Standards set forth in the RODs for the Site and the Second Amendment to the Consent Decree (CD), and describes the progress made by Asarco toward meeting these requirements. Section 3 discusses the remaining remedial actions, and how Point Ruston will either follow the documents prepared by Asarco, or submit documents for EPA review and approval which shall detail how Point Ruston will proceed with the remaining Remedial Action as described in Section 2. Section 4 provides a list of guidance materials that Asarco reviewed as part of Remedial Design pursuant to their CD and SOW. The list also serves as guidance for design changes Point Ruston may make to remaining remediation tasks.

1.3 SITE HISTORY AND DESCRIPTION

The Asarco Tacoma Smelter Superfund site (OU2 site or Smelter Site) and the Marine Sediments and Groundwater site (OU6 site or Groundwater Site) are operable units (OUs) of the larger Commencement Bay Nearshore/Tideflats (CB/NT) Superfund site. The CB N/T site was listed on the interim priority list by the U.S. Environmental Protection Agency (EPA) in 1981, and included in the first published National Priorities List in September 1983. The Smelter Site is located on the western shore of Commencement Bay and consists of 80 acres of property owned by Asarco until completion of the sale to Point Ruston (the smelter property or Smelter), and a 23 acre slag peninsula owned by the Metropolitan Park District of Tacoma. The Marine Sediments and Groundwater site encompasses the sediments offshore of the smelter property and slag peninsula, the Yacht Basin sediments located in the marina formed by the slag peninsula, and the groundwater beneath the Smelter Site. The Town of Ruston, the City of Tacoma and the Metropolitan Park District are the three municipalities who have zoning and permitting jurisdiction at the Smelter Site. Two Records of

Decision (RODs) have been issued by EPA. The OU 2 ROD for the Smelter Site addresses contaminated soils, slag, demolition debris, surface water and groundwater. The OU 6 ROD for Marine Sediments and Groundwater site addresses contaminated sediments offshore of the smelter property and slag peninsula and in the Yacht Basin, and also the groundwater beneath the Smelter Site (note that both RODs address groundwater).

OU 06 includes marine sediments that extend approximately 1,000 feet offshore into Commencement Bay. The marine sediments of interest occur in an area directly offshore of the Smelter Site. Intertidal and subtidal slopes range from relatively flat to steep inclines (slopes to approximately 50 percent). The steepest submarine slopes were generally formed by placing molten slag directly into the water where it hardened in massive forms. Water depths in the steepest gradient area within OU 06 are up to approximately 300 feet.

The general area of the former Asarco Smelter consists of steep slopes extending down to Commencement Bay producing bluffs along portions of the shoreline. The Smelter Site has been divided into six "source areas" where the highest measured concentrations of contaminants in the soils appear: the Stack Hill area, Cooling Pond area, Arsenic Kitchen area, Copper Refinery area, the Fine Ore Bins building and the southeast area of the Smelter Site. Many of the original smelter buildings and structures were constructed on slag fill, which extended the existing shoreline when molten slag from smelting operations was poured into Commencement Bay. A car tunnel and railroad tunnel are located between the Stack Hill and the Arsenic Kitchen area. Some dense vegetation exists on steep slopes (for example, the stack hill) and along the bluffs above Commencement Bay.

The adjacent slag peninsula is composed of different forms of slag (molten or granulated) that were poured or placed on many occasions between 1917 and 1970. Its primary surface features are the Tacoma Yacht Club building, a paved

access road, and paved parking areas. An estimated 15 million tons of slag exist at the smelter property and slag peninsula.

Surface water features on the smelter property include surface water in the Cooling Pond and south and east Stack Hill areas and a number of springs and seeps around the Stack Hill and Arsenic Kitchen areas. Surface water drains into one of four drain systems and then into outfalls at the Smelter Site, which are called: the city (owned by the City of Tacoma), north, middle, and south outfalls. The latter three were owned by Asarco, and are addressed as part of the remedial action.

A complex pattern of groundwater flows through or beneath the smelter property, including through the slag, into Commencement Bay. Three primary groundwater aquifers (water bearing zones) have been identified; two relatively shallow aquifers and one deep aquifer. A thick silt barrier exists between the shallow and deep aquifers throughout much of the Smelter Site. Because of the high degree of fractures in and porous nature of the slag, the tides bring seawater inland several hundred feet where it mixes with groundwater. The groundwater within each of the three aquifers is designated as either potential drinking water (Class IIB) or as non-potable water (Class III). No one is currently drinking the groundwater at or near the Smelter Site.

Prior to 1890, a number of sawmills were active in the area and deposited wood waste along the shoreline. From 1890 through 1912, the property was used as a lead smelter and refinery. Asarco purchased the property in 1905 and converted it in 1912 into a facility to smelt and refine copper from copper-bearing ores and concentrates shipped in from other locations. By-products of the smelting operations were further refined to produce other marketable products, such as arsenic, sulfuric acid, liquid sulfur dioxide and slag. Asarco ended operation of the smelter in 1985.

Metals were released into the soil, air, and Commencement Bay as a result of the smelting and refining operations. Some examples of the metals present at

the Smelter Site are arsenic, cadmium, copper, lead, and zinc. Metals in slag or released into soil have migrated to surface and groundwater at the Smelter Site. Ores which were smelted at the Smelter Site have left metals in the building and structures on the Smelter Site.

There are no listed Resource Conservation and Recovery Act (RCRA) wastes at the Smelter Site or disposed in the OCF. In several areas, soils are RCRA characteristic waste because they fail the Toxicity Characteristic Leaching Procedure. Slag is not a RCRA waste under the Bevill exemption (40 C.F.R. § 261.4).

There are no known floodplain zones or endangered species at this Smelter Site. There are several small areas of the Smelter Site, other than the Cooling Pond, which have been identified as potential wetlands. If these areas are confirmed as wetlands and if remediation occurs in these areas, the extent of mitigation necessary, if any, will be determined during Remedial Design. The Cooling Pond and immediately surrounding area are not a wetlands within the definition of “waters of the United States” since it was part of a waste treatment system and qualifies for the specific exemption for treatment ponds in 33 C.F.R. § 328.3 (1)(7).

2.0 DESCRIPTION OF THE REMEDIAL DESIGN AND REMEDIAL ACTION ACTIVITIES

This section describes the remedies outlined in the two RODs, describes progress made in their implementation, and outlines the remaining work to be performed.

Asarco completed the design and implemented much of the Remedial Action for OU2 to meet the Performance Standards set forth in the ROD, the CD, the SOW and the associated Remedial Design Reports (RDRs). The ROD for OU6 supported the remedial alternatives being performed as part of smelter

remediation (i.e. capping the Smelter Site, diverting groundwater) as being protective of the groundwater and surface water. With regard to sediment remediation, Asarco completed a design for OU6, but did not implement a remedy.

The activities described below include those portions of Remedial Design and Remedial Action completed by Asarco and remaining activities to be completed by Point Ruston.

To simplify the design and implementation of the Remedial Action for OU2, the work was divided into eight different remediation activities (Primary Activities or PAs). These Primary Activities are shown in Table 2-1 and include: PA 1.0 On-Site Containment Facility; PA 2.0 Soil Removal and Replacement; PA 3.0 & 8.0 Grade, Terrace and Cap Site/Breakwater Peninsula Remediation; PA 4.0 Groundwater Monitoring and Controls; PA 5.0 Shoreline Stabilization and Protection; PA 6.0 Surface Water Drainage and Controls; and PA 7.0 Demolition of Remaining Structures. In addition, Wetlands Identification and Mitigation Activities are described in Section 2.6. The design and implementation of the OU6 Remedial Action was divided into Groundwater Remediation, Nearshore/Offshore Sediment Capping, and Yacht Basin Dredging.

Each remaining or partially remaining remedial activity, with the requirements specific to it, is detailed below. Remaining remediation activities for OU2 include portions of all the Primary Activities except for PA 2.0 Soil Removal and Replacement. Remaining remediation activities for OU6 include capping contaminated sediments, dredging of the yacht basin and groundwater monitoring. As described below, Point Ruston will only be implementing a specific portion of the remedial action for the yacht basin in the OU6 ROD.

Requirements which apply to all of the remediation activities are not repeatedly listed for each remediation activity but are instead outlined in Section 2.9 Other Actions.

2.1 ON-SITE CONTAINMENT FACILITY (Primary Activity 1.0)

Remedial Action:

Excavate and dispose the source area soils and granular slag into an on-site containment facility (OCF) which will be constructed with surface and groundwater diversion controls. Construct the OCF to withstand earthquakes and landslides to the extent practicable.

2.1.1 Design and Construction

Asarco constructed an on-site containment facility (OCF) at a location supported by the findings of the geotechnical investigation at the Smelter Site and approved by EPA. The liner; cap; leak detection, collection and removal system; leachate collection and removal system; and surface run-on and run-off control systems were designed and constructed to meet federal and state standards for a hazardous waste landfill. An OCF As-Built Report was completed in December 2005. It will be submitted for EPA review and approval in 2006 by Asarco. An Operation, Maintenance, and Monitoring Plan was also written by Asarco to address operation and maintenance for the OCF to satisfy the requirements of 40 CFR Sections 264.115-120 and 264.310. The Operation, Maintenance and Monitoring Plan contains a response action plan which describes monitoring frequency, reporting and maintenance requirements during the closure and post-closure periods.

Point Ruston will be responsible for operations, maintenance and monitoring of the OCF during the closure and post-closure period.

TABLE 2-1 ESSENTIAL PROJECT ACTIONS AND PRIMARY ACTIVITIES

| PROJECT DRIVER | ESSENTIAL PROJECT ACTIONS |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Remedial Design/Remedial Action (RD/RA) | <ul style="list-style-type: none">1.0- On-site Containment Facility (OCF)2.0- Soil Removal and Replacement3.0- Grade, Terrace, and Cap Site4.0- Groundwater Monitoring and Control5.0- Shoreline Stabilization and Protection6.0- Surface Water Drainage and Control7.0- Demolition of Remaining Structures8.0- Breakwater Peninsula Remediation |

2.1.2 Closure Certification and Post Closure Care of the OCF

Point Ruston must adhere to the applicable closure certification, monitoring, leachate collection, operation, maintenance and record keeping requirements of 40 C.F.R. §§ 264.310, 264.115, 264.116, 264.117, 264.118, 264.119 and 264.120 as included in the OCF Operations, Maintenance and Monitoring Plan. The post-closure period for the OCF shall continue in perpetuity. Leachate collection from the OCF must continue for as long as leachate is generated by the OCF.

2.2 GRADE, TERRACE AND CAP SITE (Primary Activity 3.0), DEMOLITION OF REMAINING STRUCTURES (Primary Activity 7.0) AND BREAKWATER PENINSULA REMEDIATION (Primary Activity 8.0)

Remedial Actions:

Cap the entire Smelter Site (Smelter soils and slag and the slag peninsula). The exception is the Stack Hill area where soils have been excavated to residential standards, and steep slope areas of Stack Hill which are too steep to cap. Place Ruston/North Tacoma residential soils over the contaminated soil/slag as a “sub-base” except over the OCF.

Demolish all of the remaining buildings and structures on the Smelter Site.

2.2.1 Design and Construction

Asarco is conducting the residential remediation in Ruston/North Tacoma. Soil from that remediation continues to be brought to the Smelter Site. Additional residential soils will be generated as the residential yard remediation is completed. Point Ruston shall allow remaining stockpiled residential soils, and remaining residential soils generated as yard remediation occurs to be placed on the Smelter Site until such time development of the Smelter Site, or EPA no longer allows it to continue.

Asarco has completed remediation of Stack Hill to residential standards in accordance with the Revised Work Plan for Excavation and Removal of Soils – Ruston and North Tacoma, Washington, December, 1994. The Stack Hill area does not require capping. Steep slopes along the eastern ravine side of Stack Hill have not been remediated to residential standards. These shall be addressed by Point Ruston through Institutional Controls (e.g., fencing) to restrict access per section 3.2 of the Revised Work Plan.

Asarco completed demolition of all buildings and structures on the Smelter Site with final demolition of the Fine Ore Bins building in 2004. Point Ruston shall demolish any remaining incidental objects during the completion of remediation

(i.e. temporary water storage tanks, decon areas, temporary water treatment systems, etc.)

Point Ruston shall cap the entire Smelter Site including the slag peninsula with the exception of:

- the OCF;
- the Stack Hill area;
- areas on the property owned by Point Ruston where building foundations, roadways, parking lots, promenades and concrete walkways may be approved as the functional equivalent of the site cap; and
- other hard surfaces per design approved by EPA. .

The cap shall consist, from bottom of the cap to top, of a layer of dense (highly compacted) soil (soil excavated during the Ruston/North Tacoma residential Study Area site remediation may be used for this purpose) compacted to meet the standards in the remedial design, a physical marker layer designed to provide a visual indicator and some perforation protection, a 12-inch thick layer constructed of fine-grained, highly compacted cohesive soil, an additional 18-inch minimum layer of dense, clean cover soil, and at least 6 inches of clean topsoil and vegetation. As stated in Section 9.9 Performance Standards, of the OU2 ROD, *“Modifications of the cover system in areas where development will occur will need to be approved by EPA on a case-by-case basis.”* Point Ruston may submit a modified Remedial Design for approval by EPA. The proposed modifications will meet the performance standards in the ROD for the components being modified, and must not impact the ability of the other remedy components to meet the performance standards in the ROD.

The cap designed for the Slag Peninsula may be modified from a soil cap to incorporate solid structures (i.e. roads, buildings etc.) Point Ruston will not be required to implement a cap on the Slag Peninsula other than a soil cap, unless there is an EPA approved Operations and Maintenance Plan and an agreement approved by EPA for the long term implementation of the Operations and Maintenance Plan.

The Ruston car tunnel will be abandoned and filled to the extent practicable with suitable materials (e.g., residential soils) by Point Ruston. The ground surface over the car tunnel shall be capped.

2.2.2 Materials and Equipment

Point Ruston shall identify the materials and equipment that will be used during excavation, grading, terracing, and capping of the Smelter Site.

2.2.2.1 Grading and Contouring, Including Placement of Residential Soils as Sub-Base

Point Ruston shall grade and prepare the Smelter Site for capping, including construction of engineered fill or other geotechnical improvements determined necessary.

2.2.3 Cover System

Point Ruston must design and construct a cover system that meets the Performance Standards in the OU2 ROD. This layer must be constructed so that it will be entirely below the maximum depth of frost penetration upon completion of the cover system.

Point Ruston shall establish a construction quality assurance (CQA) program for the cover system to ensure that the constructed cover meets or exceeds all design criteria and specifications. Modifications of the cover system as it is described above to accommodate development will need to be approved by EPA.

2.2.4 Settling and Subsidence

Asarco has shown that there is little potential for settling or subsidence in areas of the Smelter Site that are to be capped. However, Point Ruston shall incorporate a plan which includes prevention of damage to cap and cover systems and minimizes settlement and subsidence of the cap (e.g., filling in voids, adequate compaction, pre-loading prior to cover placement, etc.) appropriate for the range of potential post-remediation uses in the Construction Quality Assurance Plan.

2.2.5 Steep Areas

Point Ruston, with EPA approval, shall identify if any areas on the Smelter Site that are too steep to cap. If any areas are identified, Point Ruston shall fence and plant low lying shrubs in these areas as required (e.g., the east and west gully slopes of the Stack Hill). Alternatives that are functionally equivalent for erosion and access control, as approved by EPA, may be implemented by Point Ruston if they are more practicable.

2.2.6 Disposal of Additional Ruston/North Tacoma Residential Soils

Residential soils will be placed as sub-grade at the Smelter Site as long as development allows. Point Ruston agrees to coordinate with EPA to allow on-site disposal until site development no longer makes it possible. .

2.2.7 Cap Maintenance, Including Post Closure Care

Point Ruston shall maintain the integrity and effectiveness of the final cover on its' owned property and on the soil cap on the Slag Peninsula, including conducting periodic inspections and making repairs to the soil cap as necessary to correct the effects of settling, subsidence, erosion, physical disturbances or other events. Point Ruston shall also prevent run-on and run-off from eroding or otherwise damaging the final cover. Point Ruston shall ensure that loading and stresses from future uses of the Smelter Site (e.g., roadways, walkways, buildings, parking lots, etc.) minimize any negative impact on cap integrity.

2.3 GROUNDWATER MONITORING AND CONTROLS (Primary Activity 4.0)

As required in the OU2 ROD Point Ruston will continue monitoring Smelter Site outfalls and SEAT stations at the Smelter Site. The monitoring program must be approved by EPA. At a minimum, four monitoring wells will be installed at the OCF for post-RA monitoring, one upgradient and three downgradient, Outfall and seawater sample nearshore location (SEAT) stations will also be part of post-RA monitoring.

2.4 SHORELINE STABILIZATION AND PROTECTION (Primary Activity 5.0)

Remedial Action:

Determine the extent of shoreline erosion to determine where shoreline armoring should be placed, and anchor armoring on the slag face.

2.4.1 Design and Construction

Asarco completed shoreline armoring on the southern end of the Smelter Site from Station 10+00 to 28+35 and on the breakwater peninsula from station 50+36.3 to 71+56.25.

Armoring of the middle shoreline from station 28+35 to 50+36.3 still needs to be completed. Modifications to tie middle shoreline armoring in to the nearshore/offshore cap may be required.

Point Ruston shall complete construction of the middle shoreline armoring from Station 28+35 to 50+36.3 as designed by Asarco. If design of the nearshore/offshore sediment cap is modified, shoreline armoring will be modified as needed to tie armoring to the sediment cap. Point Ruston shall reinitiate ESA consultation with the natural resource agencies as appropriate. Point Ruston will not be continuing the shoreline armoring around the tip of the slag peninsula. In addition, Point Ruston will not be repairing the earthquake damage to the habitat basin.

2.4.2 Abandoned Structures and Debris

Point Ruston shall remove any remaining abandoned structures, debris and waste near the smelter middle shoreline as necessary for construction of new erosion control structures and/or repair of damaged or under-designed control structures. Disposal of this material will be consistent with the requirements of the Transport and Disposal Plan, Hydrometrics, September 1998.

2.4.3 Long-Term Maintenance (O&M)

Point Ruston shall maintain the shoreline armoring on its owned property in perpetuity and implement long term monitoring and maintenance as described in the Upland Operations, Maintenance and Monitoring Plan.

2.5 SURFACE WATER DRAINAGE AND CONTROLS (PRIMARY ACTIVITY 6.0)

Remedial Action:

Plug and abandon or remove the entire existing surface water drainage system and replace with a system compatible with post-remediation uses.

2.5.1 Design and Construction

Asarco completed removal of a significant portion of the existing surface water drainage system including plugging and abandoning the middle outfall.

Any remaining surface water drainage systems will require plugging and abandonment and a new system compatible with post-remediation use will have to be installed by Point Ruston.

Point Ruston shall plug the existing surface water inlets and outlets, and abandon or remove the surface water drainage system, and shall install a new drainage system, including outfall(s), in the Smelter Site cap to collect or divert water that runs onto the Smelter Site from the off-site drainage basins and from precipitation that originates on the Smelter Site. Point Ruston will abandon the

north and south outfalls and associated drainage systems, and replace these outfalls with a new single combined outfall if approved by EPA.

Parametrix completed a preliminary review, as described in their memorandum dated February 21, 2006, which indicated flow capacity from the north and south outfalls could be combined into a new larger single outfall system with no reasonable potential to exceed water quality and sediment standards.

Point Ruston shall ensure that seeps on the Stack Hill and other areas of the Smelter Site are appropriately controlled so as not to contaminate the remediated Smelter Site. Point Ruston shall divert or treat (if required by permitting agencies or EPA) any off-site water that runs onto or through the owned property on the Smelter Site. Point Ruston shall comply with all applicable laws in controlling soil erosion and contaminated stormwater runoff including the use of best management practices (for example, sediment ponds, silt fences, diversion ditches, cut and fill slopes), to the extent practicable.

2.5.2 Management Including Diversion System

Point Ruston shall manage surface water, including stormwater, during the abandonment/removal of the remaining surface water drainage system. In addition, Point Ruston shall manage surface water generated from dust control activities during RA tasks in accordance with the Dust Control Plan.

Point Ruston shall design and implement a post-remediation water collection system for the Smelter Site which meets all state and local requirements. Point Ruston plans to divert offsite water from running onto the site. Therefore, storm water management will be concerned with onsite water. It is expected that water entering this system from the Smelter Site will not exceed applicable standards for Smelter Site contaminants. Therefore, this system shall be part of the improvements of the property and not part of the remediation, and permits will be required. EPA may revisit this requirement if in fact surface water does exceed applicable standards for site contaminants.

2.5.3 Materials and Equipment

In the Smelter Site design, Asarco identified the materials and equipment necessary to abandon/remove the existing drainage system and replace it with a new drainage system.

2.5.4 Long-Term Monitoring Requirements

Point Ruston shall monitor surface water quality during and after implementation of repair and replacement of the drainage system, soil removal, and capping as described in the RA Monitoring Plan and Upland Operations, Maintenance and Monitoring Plan. EPA may require Point Ruston to monitor the water quality of offsite flows diverted from the Smelter Site.

2.5.5 Long-Term Operation and Maintenance (O&M)

Point Ruston shall provide, either directly or through its successors-in-interest, for the maintenance in perpetuity of the surface water drainage system so that it remains in proper working condition. Maintenance shall include routine inspection and cleaning of catch basins, culverts, outfalls, and other components of the system.

2.5.6 Compliance with Performance Standards

Asarco was required to meet the Performance Standards for Smelter Site surface water set forth in Table 2-4 of the Asarco Final Statement of Work for the Commencement Bay Nearshore/Tideflats Superfund Site, an attachment to the 1996 Asarco Consent Decree unless they were modified by EPA. In response to the requirements of the SOW, Asarco prepared a Post-Remediation Surface Water Evaluation and Technical Impracticability Demonstration Report to illustrate that remediation goals contained in Table 2-4 could not be met without substantial costs that would be disproportionate to the incremental environmental benefit of attaining them.

As part of the remedial design for OU6, Asarco also completed a reasonable potential analysis, detailed in the Pre-Final Design Analysis Report - Asarco

Tacoma Smelter North and South Stormwater Marine Outfalls - June 2001, to evaluate the potential for concentrations of metals in the Smelter Site surface water to exceed Washington State marine water quality standards (WAC 173-201A) when discharged from the proposed outfalls. The analysis determined that there is not a reasonable potential to exceed marine water quality standards for the four metals of concern (arsenic, copper, lead and zinc). The 2001 Report also evaluated the long-term potential for sediment recontamination and indicated no reasonable potential for surface water discharges to exceed the SQS in sediments.

Parametrix's memorandum dated February 21, 2006 summarized these analyses, provided the predicted water quality results and sediment recontamination potential, and evaluated the need for treatment of surface water runoff from the Smelter Site prior to Commencement Bay through the proposed outfalls. The memorandum concluded that previously proposed stormwater treatment systems are not necessary to protect water quality or marine sediments from adverse impacts from arsenic, copper, lead and zinc contained in surface water runoff.

Pending approval of the above memo and any additional submittals required by EPA to document that treatment is not required to meet all applicable standards, Point Ruston shall not be required to install treatment vaults to treat onsite surface water based on these analyses. Smelter Site surface water is expected to be clean and will fall under City of Tacoma outfall and stormwater management standards.

Additionally, any required future treatment of off-site water diverted from flowing through the Smelter Site shall not be the responsibility of Point Ruston. However, onsite, offsite, or groundwater which is discharged from outfalls on the Point Ruston owned property will be required to meet applicable standards.

2.5.7 Mixing Zone Identification

Asarco completed analyses to determine the need for a mixing zone in the PA 6 – Group 2b Preliminary Design Criteria Report, March 1998. The analysis included:

1. Demonstrating that all known, available and reasonable technology (AKART) has been either evaluated or implemented at the Smelter Site.
2. Providing the supporting information which clearly indicates that the mixing zone would not have a reasonable potential to cause a loss of sensitive or important habitat, substantially interfere with the existing or characteristic uses of the water body, result in damage to the ecosystem or adversely affect public health.

Asarco completed a pilot study to determine if the remediation goals (RGs) for the four “metals of concern” (arsenic, copper, lead, and zinc) could be met without a mixing zone. Based on results from the pilot study, it was recommended that the four “metals of concern” be analyzed for compliance with marine water quality standards within allowable acute and chronic mixing zones per WAC 173-201(A)-100. All other parameters listed in Table 1-1 of the Pre-Final Design Analysis Report – Asarco Tacoma Smelter North and South Stormwater Marine Outfalls, Primary Activity 6 – Group 2b are expected to meet RGs. Point Ruston may construct new outfalls to incorporate mixing zones if allowable under state law.

2.6 WETLANDS IDENTIFICATION AND MITIGATION ACTIVITIES

Point Ruston shall conduct the mitigation activities described below for PAs 3.0/8.0 and 5.0 if EPA determines that wetlands or aquatic ecosystems are adversely impacted by the RA.

By providing this information in the SOW, EPA is in no way providing an *a priori* agreement that a proposed project which addresses the concerns listed here will be acceptable or that it would comply with Section 404 of the CWA. This

decision will be made only after EPA performs the 404(b) (1) analysis and reviews public comments on the project following provision by Point Ruston of the necessary information.

These requirements are not intended to address any restoration activities which may be necessary to compensate for Natural Resource Damages under Section 107(f) of CERCLA.

Since guidance and policies pertaining to the discharge of dredged or fill material into the aquatic environment may change over time, Point Ruston must comply with current policies in place at the time the CD is executed by Point Ruston and EPA. Point Ruston will consult with EPA, the Corps of Engineers and resource agencies to obtain information applicable on that date.

2.6.1 Requirements for Wetlands Assessment

Point Ruston shall conduct all work in accordance with EPA's "Guidance on Considering Wetlands at Superfund Sites," May 9, 1994 (OSWER Directive Number 9280.0-03).

Point Ruston shall determine the potential impacts to wetlands from response actions in order to comply with the Clean Water. In addition, the extent of wetlands impacts and ecological structure of the impacted wetlands must be known when proposing and evaluating mitigation measures for wetlands impacts.

2.6.1.1 Requirements for Mitigation if there are Adverse Impacts to Intertidal Habitat or Wetlands

EPA will use the following EPA policies and guidance in evaluating proposals for discharge of dredged or fill material into the aquatic environment: Section 404 of the Clean Water Act (CWA), 22 U.S.C. 1251 *et seq.*, the CWA Section 404(b)(1) guidelines (40 C.F.R. Part 230), and the March 24, 1995, Site ROD.

Section 404 of the Clean Water Act allows for discharge of dredged or fill material into the aquatic environment only when it can be demonstrated that such

a discharge will not have an unacceptable adverse impact, either individually or in combination with known and/or probable impacts of other activities affecting the ecosystems of concern. The intent of the CWA Section 404(b) (1) guidelines is to restore and maintain the chemical, physical, and biological integrity of waters of the United States through control of discharges of dredged or fill material.

If necessary, Point Ruston shall propose a compensation package that will adequately compensate for impacted resources. EPA's overall goal is to ensure no net loss of wetlands and aquatic sites. The compensation package shall account for both short-term temporary losses and for the proposed project's value to the ecosystem. In determining compensation, EPA will evaluate whether the project includes "restoration" of the function of a previously existing habitat, "creation" of a new aquatic habitat from a non-aquatic area, or "enhancement" of the value of an existing aquatic habitat. EPA generally gives more mitigation "credit" for restoration (because new habitat is created and past experience shows a higher probability of success), and least "credit" for enhancement projects (which often involve exchanging one type of wetland habitat for another).

2.7 SURFACE AND GROUNDWATER MONITORING

Remedial Actions:

Monitor groundwater to evaluate the long-term effects that the Facility cleanup will have on the future groundwater quality.

Monitor surface water to ensure that the sediment cap is not recontaminated, and that surface water discharge requirements are met.

2.7.1 Implementation

Asarco will perform monitoring until the property sale. Point Ruston shall continue monitoring of the surface and groundwater in accordance with the RODs and approved designs and monitoring plans as part of post RA monitoring.

2.8 SEDIMENT CAPPING AND YACHT BASIN DREDGING

Remedial Actions:

Cap contaminated sediments in an approximate 18-acre area offshore of the former Asarco facility with clean fill

Excavate contaminated sediments in the Yacht Basin. Place sediments under the upland Smelter Site cap.

Point Ruston is required to install the 18-acre offshore cap. Point Ruston is required to implement a portion of the remedy for the Yacht Basin. As an interim measure for protection of public health, Point Ruston shall excavate the shallow nearshore sediments in the Yacht Basin as described below. They are not required to dredge the deep sediments in the Yacht Basin.

2.8.1 Design

The original design for the sediment cap and Yacht Basin was completed by Asarco and approved by EPA in 2004. There has been no progress made on implementation of this portion of the remedy.

Point Ruston may request that EPA allow changes to the approved sediment cap design. Any new cap design must meet the substantive requirements of the previous design as generally described in the “*Guidance for In-situ Subaqueous Capping of Contaminated Sediments*” (September 1998, Reference EPA 905-B6-004). The cap design shall address the following factors:

- 1) Caps will have a minimum thickness of three (3) feet unless an alternative thickness is demonstrated to be consistent with “*Guidance for In-situ Subaqueous Capping of Contaminated Sediments*,” and/or otherwise approved by EPA.
- 2) Caps will be constructed to address adverse impacts through four primary functions:

- a. Physical isolation of the contaminated sediment from ecological receptors;
- b. Confinement and stabilization of contaminated sediments, preventing re-suspension and transport to other locations;
- c. Reduction of chemicals transported through the groundwater pathway to levels that will not impact surface sediments (defined as the “biologically active zone” where most sediment-dwelling organisms live) above the CB N/T Sediment Quality Objective (SQOs), and will not impact surface water at levels exceeding background concentrations or marine chronic water quality criteria;
- d. Provide a cap surface that promotes colonization by aquatic organisms, unless it is demonstrated not to be practicable.

- 3) Protectiveness of the proposed cap,
- 4) Compatibility with current and anticipated future land use,
- 5) Property owner’s (e.g., Washington Department of Natural Resources) willingness to implement use restrictions on the capped area and/or ensure such restrictions will run with the land,
- 6) Engineering constraints, and
- 7) Avoidance and/or minimization of habitat impacts and compliance with Endangered Species Act measures that may be identified.

Point Ruston shall demonstrate that all capped areas addressed under this SOW are completed in accordance with these performance standards. Point Ruston shall submit proposed alternatives to the final cap design as an amendment(s) for EPA review and approval. Methods for achieving the objectives for the capped areas shall be addressed in the amendment(s).

For the purpose of remediation under this SOW, dredging the shallow sediments in the Yacht Basin has been separated from the dredging of the deeper sediments in the Yacht Basin. As described below, Point Ruston shall implement the excavation of these shallow sediments. Remaining sediment remediation in the Yacht Basin shall not be the responsibility of Point Ruston and shall be addressed separately by others.

2.8.2 Construction

Point Ruston shall cap contaminated sediments in an approximate 18-acre area offshore of the former Asarco facility with clean fill. The sediment cap shall be tied into the shoreline armoring. As practicable, and as approved by EPA, Point Ruston shall meet performance standards at the completion of each sediment cap construction phase.

Point Ruston shall excavate the nearshore shallow sediments on the southwestern shoreline of the Yacht Basin which could be contacted by recreational users. Sediments shall be excavated above the MLLW tide line (0 MLLW) to a minimum depth of 12 inches. Excavation limits shall extend from the MLLW tide line to existing bulkhead or tidal grid at the northern end of the southwestern shoreline and from the MLLW tide to existing bulkhead, shoreline or tidal grid on the southern end of the southwestern shoreline. Existing bulkheads and tidal grids will not be removed.

The following information pertains to the shallow sediments in the Yacht Basin. Core sampling locations and results are summarized on Figure 1 of Appendix A

to the Final Design Report for Sediment Dredging: Marine Sediments and Groundwater, Parametrix - June 2004. Confirmed depths of contamination between the MLLW tide line and the southwestern shoreline are 7 inches at the northern end and 5 inches on the southern end. Verification monitoring shall be completed for As, Cu, Pb, and Zn following excavation to determine if a second excavation cut is necessary to attain cleanup levels. Grab samples will be collected in the excavated areas and analyzed using either X-ray fluorescence or conventional wet-chemistry methods. Analytical results shall be provided to EPA. Backfilling or additional excavation of these areas will be required if the chemical performance standards for sediments or for residential exposure are not met.

2.8.3 Long-Term Maintenance (O&M)

Verification of performance standards shall be documented in the Construction Quality Assurance Project Plan (CQAP), as appropriate. Point Ruston shall conduct monitoring of the cap area following placement in order determine the success of the remedial action. Long-term monitoring shall be conducted on the sediment cap to confirm that it remains in place, continues to isolate the underlying contaminated sediments and does not become recontaminated with site contaminants. After Point Ruston completes construction of the sediment cap required in a Phase and EPA issues a Certification of Completion for that Phase, Point Ruston shall no longer be required to meet Performance Standards with respect to the capped sediments (including making repairs to correct the effects of recontamination, settling, subsidence, erosion, physical disturbances, or other forces); provided however, that if the sediment cap does not meet Performance Standards at the completion of the Remedial Action, then EPA may withdraw its Certification(s) of Completion for the cap until either (i) Point Ruston demonstrates that its actions were not responsible for the cap no longer meeting Performance Standards, or (ii) Point Ruston takes those actions necessary to again meet Performance Standards.

2.9 OTHER ACTIONS

2.9.1 Comprehensive Plans and Documents

Comprehensive Plans and Documents (CP&D) are plans and documents that have application to all Remedial Design/Remedial Action PAs because they are the control documents that, in addition to design deliverables, describe how RD/RA activities will be conducted at the Smelter Site. The following CP&Ds were prepared by Asarco as part of Remedial Design and will be edited as necessary, and implemented by Point Ruston for the remaining remediation tasks:

- Sampling and Analysis Plans (SAP);
 - Field Sampling Plans (FSP);
 - Quality Assurance Project Plans (QAPP);
- Health and Safety Plans (HSP);
- Fire Protection Plans (FPP); and
- Operations and Maintenance Plans (O&M).

2.9.2 Integrating Remediation with Land Use Plans.

Consistent with the institutional control provisions of the CD, Point Ruston shall develop an enforceable program of private restrictions and guidelines to supplement the actual remediation activities. Such measures are necessary to ensure that development activities do not have an impact on the long-term effectiveness of the remediation.

The Institutional Controls shall integrate remediation with future land uses by developing institutional controls that ensure that: (1) the integrity of the remediation activities is continued; (2) future remediation measures will not be prevented or hindered by future entities in the developed area; (3) little or no

remaining contaminants of concern are exposed or released during future (post-remediation) excavation; and (4) the use of groundwater at the Smelter Site will be prohibited and markers or signs for future users and occupiers of the Smelter Site will be provided.

Asarco prepared the OCF Operations, Maintenance and Monitoring Plan (OCF OMMP) that shall be implemented by Point Ruston or its successors to ensure the continued integrity of the OCF. Point Ruston shall prepare an Upland Operations, Maintenance and Monitoring Plan (Upland OMMP) which addresses the Smelter Site cap, shoreline armoring, sediment cap monitoring, and groundwater and surface water monitoring requirements. Point Ruston shall be responsible for monitoring activities including regularly scheduled inspections of the Smelter Site cap, the OCF, and shoreline armoring on its' owned property. In addition, Point Ruston is responsible for monitoring the sediment cap, and maintenance of the soil cap on the Slag Peninsula. Maintenance activities on Point Ruston's owned property shall include repair of damage to, or failures of, the Smelter Site cap, the OCF, and shoreline armoring.

Point Ruston shall comply with established guidelines for conducting construction and maintenance activities to ensure that little or no remaining contamination is exposed or released during future (post-remediation) excavation and ensure that such guidelines shall be enforceable against all successors-in-interest that own, construct or operate building or other structures at the Smelter Site. EPA approval shall be required for any activity that may disturb the integrity of the Smelter Site cap, the OCF or shoreline armoring.

The OCF OMMP and Upland OMMP include guidelines to identify the appropriate actions if an exposure or release of contaminated soil and/or granular fill occurs (e.g., define each party's responsibility for disposal of soil). Activities addressed by these procedures will include installation of underground utilities, basements or elevator shafts, and roadways. The Upland OMMP

includes a soil collection, transportation, and disposal program to apply when soil below the Smelter Site cap is excavated or exposed.

Point Ruston shall develop public educational materials and markers or signs for future users and occupiers of the Smelter Site. All material must be reviewed and approved by EPA. The materials and markers or signs will describe the remediation and explain what the users and occupiers should and should not do to maintain the effectiveness of the remediation. In addition, material prepared for occupants on the Smelter Site must include information on the following:

- Future Smelter Site maintenance, and requirements for future funding of the Operation and Maintenance
- Sequencing of the remediation and timeline for completion

EPA reserves the right to ensure that future remedial measures will not be prevented or hindered by development activities, including the setting aside of a portion of the Smelter Site for remediation of groundwater or surface water if necessary.

2.9.3 Community Relations

Asarco prepared the Community Health and Safety Plan/Coordination Plan, revised May 2001. Point Ruston shall continue to implement this plan during remaining remediation tasks. This program was established to ensure coordination and communication of remediation activities and schedules, road closures, and other activities and conditions that should be expected in the community during remediation activities, and any recommended safeguards or precautions. While Point Ruston maintains their lease area in the “Ruston School”, Point Ruston shall provide EPA with space for oversight activities, and space for operation of the Asarco Information Center.

2.9.4 Road Closures

In the event that it will be necessary to close roads at or near the Smelter Site during any portion of remediation activities, Point Ruston shall coordinate with the Town of Ruston and City of Tacoma regarding alternative routes and notification procedures.

2.9.5 Safety Measures

On-site activities throughout implementation of the selected remedy shall comply with all appropriate occupational health and safety regulations including 29 C.F.R. §§ 1910.120 and 1926 as described in the Construction Health and Safety Plan/Contingency Plan and Community Health and Safety Plan/Coordination Plan prepared by Asarco.

2.9.6 Air Monitoring

During remediation, Point Ruston shall ensure that no visible dust is present during excavation activities. In addition, Point Ruston shall evaluate potential emissions of contaminants into the ambient air as a result of implementation of the remaining remedial action tasks. All sampling and data gathering methods to be used must be described in detail, including sampling, frequency of testing, acceptance/rejection criteria, turn-around time, and plans for correcting problems. Hi-vol and PM₁₀ air particulate or, if approved by EPA, portable air samplers consisting of battery powered pumps equipped with cellulose ester filter cassettes shall be placed at locations approved by EPA and used to confirm that the incremental levels identified in Table 2-5 are not exceeded. Air monitoring requirements will be discontinued once the Smelter Site cap is in place. If approved by EPA, offsite air monitoring may be discontinued once the temporary cap is in place. However, onsite monitoring may be required to ensure development areas are not impacted by remediation.

TABLE 2-2 AIR MONITORING ACTION LEVELS

| Air Monitoring Action Levels | |
|-------------------------------------|-------------------------|
| Parameter | ug/m³ |
| Arsenic | 0.2 |
| Lead | 0.75 |
| PM ₁₀ | 75 |

2.9.7 Dust Control

In order to minimize the potential for dust emissions to the extent practicable, Point Ruston shall wet key traffic areas and roads used for the remedial action; use dust suppression agents (wetting agents or polymer); decontaminate vehicles at designated truck washing stations prior to using off-site roads; cover trucks containing hazardous materials (e.g., stack bricks) and use dust suppression on off-site roadways, if necessary.

2.9.8 Transportation and Decontamination

Point Ruston shall continue to implement the Transport and Disposal Plan prepared by Asarco in September 1998 and included in Volume I of the Comprehensive Plans and Documents. This plan was written to establish local truck routes to minimize, to the extent practicable, disruption to the community. This plan also identifies damage control measures and responsibility for repairing existing roadways in the event that they are degraded or damaged solely by remedial action activities. In addition, Point Ruston shall continue to implement the Decontamination Plan prepared by Asarco and included in section 5 of the Construction Health and Safety Plan/Contingency Plan, Revision 1, May 2001.

2.10 COMPLIANCE WITH THE PERFORMANCE STANDARDS

Point Ruston shall perform compliance testing to ensure that all Performance Standards are met for all remaining elements of the selected remedies described in the ROD and performed by Point Ruston. In addition, for property owned by Point Ruston, Point Ruston shall perform compliance testing to ensure that all Performance Standards in the ROD are met. By meeting the Performance Standards for all elements of the selected remedy described in the ROD, including operation and maintenance and monitoring requirements, the overall cancer risk and hazard index for the Smelter Site as set out in the ROD shall be considered met.

Remediation of subsurface groundwater is specifically excluded from the scope of the remedy selected in the ROD. Therefore, the Performance Standards do not include the preliminary remediation goals for Class III groundwater set out in Table 9-2 of the ROD.

2.11 SEQUENCING OF DEVELOPMENT AND OCCUPANCY

Point Ruston shall submit a plan for EPA approval describing the sequence for completion of the elements of the remedial action and plans for Smelter Site development and occupancy. The purpose of this plan is to allow for the development of the property before the completion of Smelter Site capping, while ensuring that ongoing construction activities will not create a health hazard for future occupants of the property. Protective measures will include buffer zones between existing units and construction. In addition, an EPA approved temporary cap composed of a marker, and clean soil covered with vegetation, or an alternate design approved by EPA will be required over the entire Smelter Site prior to first occupancy.

3.0 SCOPE OF THE REMEDIAL DESIGN AND REMEDIAL ACTION

Point Ruston shall utilize existing work plans and related documents, in whole or part, as may be applicable to each phase of remaining design and construction. Asarco prepared the Comprehensive Plans and Documents for the Smelter Site including Sampling and Analysis Plans (SAPs), Quality Assurance Project Plans (QAPPs), Health and Safety Plans (HSPs), Fire Protection Plans (FPPs) and other required documents with site-wide applicability. Point Ruston shall continue to implement these plans as applicable.

Point Ruston shall perform and shall assume all responsibility for the accuracy and completeness of any remaining design work and services for the described project in accordance with Performance Standards, criteria, and instructions as described in this SOW. Point Ruston shall be responsible for the correction of any design errors or deficiencies in their work. Should design changes as a result of revised criteria be required, EPA may instruct Point Ruston to perform the necessary redesign work. EPA shall consider any necessary schedule revisions, including suspension of activities without penalty, should any design changes result from revised criteria.

When submitting project deliverables to EPA, Point Ruston shall resolve apparent deficiencies, ambiguities, conflicts and inconsistencies in the documents. A letter of transmittal shall be signed by the authorized representative of Point Ruston. In the event that discrepancies, omissions, or other errors in the drawings and specifications are discovered after final design document submission, Point Ruston shall review the specifications and/or contract drawings or prepare sketches and provide the necessary data.

3.1 REMEDIAL DESIGN

Asarco substantially completed Remedial Design for the Smelter Site. Point Ruston shall submit revised plans and specifications for modifications to the remaining remediation tasks as required for EPA review and approval (e.g., site cap, outfall design).

Point Ruston shall also submit final drafts of the Construction Management Plan and Construction Quality Assurance Plan/Performance Standards Verification Plan for PA 3 & 8 to EPA for review and approval.

1. Construction Management Plan.

A Construction Management Plan shall be developed to indicate how the construction activities are to be implemented and coordinated with EPA during the remaining RA. Point Ruston shall designate a person to be a Remedial Action Coordinator and its representative on-site during the Remedial Action, and identify this person in the Plan.

2. Construction Quality Assurance Project Plan/Performance Standard Verification Plan.

Point Ruston shall develop and implement a Construction Quality Assurance Project Plan for the Smelter Site cap (PA 3 & 8) to ensure, with a reasonable degree of certainty, that the completed Remedial Action meets or exceeds all design criteria, plans and specifications, and Performance Standards.

As stated previously in section 3.0, Point Ruston shall continue to implement existing work plans and related documents prepared by Asarco, in whole or part, as may be applicable to each phase of remaining design and construction. If required, due to design changes or revised monitoring requirements, Point Ruston will submit addenda to the plans, specifications, or Comprehensive Plans and Documents for EPA review and approval.

Point Ruston shall provide all future land use plans, including all submissions to other agencies for purposes of obtaining permits or other approvals, to EPA as they become available.

3.2 REMEDIAL ACTION

Remedial Action shall be performed by Point Ruston to implement the remaining response actions outlined in this SOW. Remaining remediation tasks are described in Asarco prepared documents, and may be amended in future EPA approved amendments prepared by Point Ruston, these include:

- the Upland Final Design prepared by Asarco and amendments to that design prepared by Point Ruston and submitted to EPA for review and approval; and
- The Final Design Report for Sediment Cap: Marine Sediment and Groundwater prepared by Asarco and amendments to that design prepared by Point Ruston and submitted to EPA for review and approval. Point Ruston will incorporate excavation of the nearshore shallow sediments on the southwestern shoreline of the Yacht Basin above the tideline (0 MLLW) to the limits of the tidal grid at a minimum depth of 12 inches in the amendment to the Sediment design.

Point Ruston shall implement the remaining Remedial Action in accordance with the approved Final Construction schedule. Significant field changes to the RA as set forth in the Final Design for each PA shall not be undertaken without the approval of EPA. The RA shall be documented in enough detail to produce as-built construction drawings after the RA is complete. Deliverables shall be submitted to EPA for review and acceptance in accordance with paragraph 31 and Section XI of the CD.

3.2.1 Remedial Action Construction

As outlined in the amended CD, Point Ruston plans on completing the remedial action in Phases which are subject to EPA approval. For the purpose of obtaining a certification of completion for remedial activities not associated with the remediation of the upland property purchased by Point Ruston, capping the offshore sediments and capping the Slag Peninsula may considered Phases so

that they may receive certificates of completion without an associated Smelter Property completion. Unless otherwise approved by EPA, EPA will only issue two certifications of completion for the sediment cap, one for the sand/silt cap, and one for the cap between the sand/silt cap and shoreline armoring.

Point Ruston shall implement the remaining Remedial Action as detailed in the approved Final Design and approved amendments prepared by Point Ruston. The following activities shall be completed in constructing the Remedial Action.

1. Preconstruction Phase Conference.

A Preconstruction Phase Conference shall be held before initiation of each Phase of construction activities. This conference shall include Point Ruston and federal, state and local government agencies as required and shall address the remedial action components of the Phase.

The Preconstruction Phase Conference must be documented, including names of people in attendance, issues discussed, clarifications made, special instructions issued, and so forth.

2. Pre-Final Phase Construction Inspection.

Upon preliminary completion of the RA for each Phase, Point Ruston shall notify EPA for the purpose of conducting a Pre-Final Construction Inspection for said Phase or logical subunit of the Phase. Participants may include the other federal, state, and local agencies with a jurisdictional interest. The Pre-Final Inspection shall consist of a walk-through inspection of the Smelter Site specific to the Phase. The objective of the inspection is to determine whether the construction is complete and consistent with the Performance Standards and design requirements for the Phase or logical subunit of the Phase. Any incomplete construction items discovered during the inspection shall be identified and noted. The Pre-Final Construction Inspection Report for each Phase or logical subunit of the Phase shall be submitted by Point Ruston in a

memorandum which outlines the outstanding construction items, actions required to resolve the items, completion date for the items, and an anticipated date for the Final Inspection.

3. Final Phase Construction Inspection.

Upon completion of all outstanding construction items for a Phase, Point Ruston shall notify EPA for the purpose of conducting a Final Construction Inspection. The Final Construction Inspection shall consist of a walk-through inspection of the Site specific to the Phase. The Pre-Final Construction Inspection Report shall be used as a check list with the Final Construction Inspection focusing on the outstanding construction items identified in the Pre-Final Construction Inspection. All tests that were originally unsatisfactory shall be conducted again. Confirmation shall be made during the Final Construction Inspection that all outstanding items have been resolved. Any outstanding construction items discovered during the inspection still requiring correction shall be identified and noted. If any items are still unresolved, the inspection shall be considered to be a Pre-Final Construction Inspection requiring another Pre-Final Construction Inspection Report and subsequent Final Construction Inspection.

4. Final Phase Construction Report/Remedial Action Report.

Within thirty (30) days following the conclusion of the Final Construction Inspection for each Phase, Point Ruston shall submit a Draft and then Final Construction Report for each Phase. EPA will review the draft report and will provide comments to Point Ruston. The Final Construction Report for each Phase shall include the following:

- a) Brief description of how outstanding items noted in the Prefinal Inspection were resolved;
- b) Explanation of any modifications made during the RA to the original design plans and why these changes were made;

- c) As-built drawings;
- d) Synopsis of the construction work defined in the SOW and certification that the construction work has been completed; and
- e) Final Construction Quality Assurance Project Plan Report. At the completion of the project, Point Ruston shall submit a final report to EPA. This report should include all of the daily inspection reports, the daily manufacture quality assurances/construction quality assurances (MQA/CQA) engineer's summary reports, inspection data sheets, problem identification and corrective measures reports, and other documentation such as quality control data provided by manufacturers or fabricators, laboratory test results, photographs, as-built drawings, internal MQA/CQA memoranda or reports with data interpretation or analyses, and design changes made by the design engineer during construction. The document should be certified by the MQA/CQA certifying engineer.
- f) Certification that the Remedial Action for the Phase has been completed in full satisfaction of the requirements of the CD.

3.2.2 Final Certification

Within thirty (30) days following conclusion of the final Phase, Point Ruston shall submit certification that the Remedial Action for all Phases has been completed in full satisfaction of the requirement of the RODs and CD.

4.0 REFERENCES

The following list, although not comprehensive, comprises many of the guidance documents that apply to the RD/RA process. Point Ruston shall review the following guidance and shall use the information provided therein as applicable in performing the RD/RA and preparing all deliverables under this SOW.

1. "National Oil and Hazardous Substances Pollution Contingency Plan, Final Rule", Federal Register 40 C.F.R. Part 300, March 8, 1990.
2. "Superfund Remedial Design and Remedial Action Guidance," U.S. EPA, Office of Emergency and Remedial Response, June 1986, OSWER Directive No. 9355.O-4A.
3. "Interim Final Guidance on Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties," U.S. EPA, Office of Emergency and Remedial Response, February 14, 1990, OSWER Directive No. 9355.5-01.
4. "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final," U.S. EPA, Office of Emergency and Remedial Response, October 1988, OSWER Directive No. 355.3-01.
5. "A Compendium of Superfund Field Operations Methods," Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, EPA/540/P-87/001a, August 1987, OSWER Directive No. 9355.0-14.
6. "EPA NEIC Policies and Procedures Manual," EPA-330/9-78-001-R, May 1978, revised November 1984.
7. "Data Quality Objectives for Remedial Response Activities," U.S. EPA, Office of Emergency and Remedial Response and Office of Waste Programs Enforcement, EPA/540/G-87/003, March 1987, OSWER Directive No. 9335.0-7B.
8. "Guidelines and Specifications for Preparing Quality Assurance Project Plans," U.S. EPA, Office of Research and Development, Cincinnati, OH, QAMS-004/80, December 29, 1980.
9. "Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans," U.S. EPA, Office of Emergency and Remedial Response, QAMS-005/80, December 1980.

10. "Users Guide to the EPA Contract Laboratory Program," U.S. EPA, Sample Management Office, August 1982.
11. "Environmental Compliance Branch Standard Operating Procedures and Quality Assurance Manual," U.S. EPA Region IV, Environmental Services Division, February 1, 1991, (revised periodically).
12. "USEPA Contract Laboratory Program Statement of Work for Organics Analysis," U.S. EPA, Office of Emergency and Remedial Response, February 1988.
13. "USEPA Contract Laboratory Program Statement of Work for Inorganics Analysis," U.S. EPA, Office of Emergency and Remedial Response, July 1988.
14. "Quality in the Constructed Project: A Guideline for Owners, Designers, and Constructors, Volume 1, Preliminary Edition for Trial Use and Comment," American Society of Civil Engineers, May 1988.
15. "Interim Guidance on Compliance with Applicable or Relevant and Appropriate Requirements," U.S. EPA, Office of Emergency and Remedial Response, July 9, 1987, OSWER Directive No. 9234.0-05.
16. "CERCLA Compliance with Other Laws Manual," Two Bolumes, U.S. EPA, Office of Emergency and Remedial Response, August 1988 (Draft), OSWER Directive No. 9234.1-01 and -02.
17. "Guidance on Remedial Actions for Contaminated Groundwater at Superfund Sites," U.S. EPA, Office of Emergency and Remedial Response, (Drfat), OSWER Directive No. 9283.1-2.
18. "Guide for Conducting Treatability Studies Under CERCLA," U.S. EPA, Office of Emergency and Remedial Response, Pre-publication Version.
19. "Health and Safety Requirement of Employees Employed in Field Activities," U.S. EPA, Office of Emergency and Remedial Response, July 12, 1981, EPA Order No. 1440.2.
20. "Standard Operating Safety Guides," U.S. EPA, Office of Emergency and Remedial Response, November 1984.
21. "Standards for General Industry," 29 C.F.R. Part 1910, Occupational Health and Safety Administration.
22. "Standards for the Construction Industry," 29 C.F.R. § 1926 Occupational Health and Safety Administration.

23. "NIOSH Manual of Analytical Methods," 2d edition. Volumes I – VII, or the 3rd edition, Volumes I and II, National Institute of Occupational Safety and Health.
24. "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities," National Institute of Occupational Safety and Health/Occupational Health and Safety Administration/United States Coast Guard/Environmental Protection Agency, October 1985.
25. "TLVs – Threshold Limit Values and Biological Exposure Indices for 1987 – 88," American Conference of Governmental Industrial Hygienists.
26. "American National Standards Practices for Respiratory Protection, American National Standards Institute Z88.2-1980, March 11, 1981.
27. "Quality in the Constructed Project – Volume 1," American Society of Civil Engineers, 1990.
28. "Wetland Creation and Restoration: The Status of the Science" (Kusler and Kentula, 1990).
29. "Wetland Mitigation Replacement Ratios: Defining Equivalency (WDOE, 1992).
30. Documents for the EPA Sitcum Waterway remediation project, including EPA's CWA Section 404(b) (1) analysis.
31. Sources which Asarco should consult for potential restoration sites include the Corps of Engineer's Cumulative Impact Study and the most current version of the Natural Resource Trustees' list of Priority Habitat Areas, Aquatic Areas, and Potential Restoration Areas in Commencement Bay.

Landfill Guidance Documents

1. Technical Guidance Document: Final Covers on Hazardous Waste Landfills and Surface Impoundments, EPA/530-SW-89-047.
2. Technical Guidance Document: The Fabrication of Polyethylene FML Field Seams EPA/530/SW-89-069.
3. Seminar Publication Requirements for Hazardous Waste Landfill Design, Construction, and Closure, EPA/625/4-89/022.
4. Relationship of Laboratory – and Field – Determined Hydraulic Conductivity in Compacted Clay Layer, EPA/600/2-90/025, June 1990.
5. Seminars-Design and Construction of RCRA CERCLA Final Cover, CERL 90-50.
6. Seminar Publication Design and Construction of RCRA/CERCLA Final Covers, EPA/625/4-91/025.
7. Technical Guidance Document: Inspection Techniques for the Fabrication of Geomembrane Field Seams, EPA/530/SW-91/051.
8. Seminar Publication Design and Construction of RCRA/CERCLA Final Covers, EPA/625/4-91/025, May 1991.
9. Technical Resource Document Design, Construction, and Operation of Hazardous and Non-Hazardous Waste Surface Impoundments, EPA/530/SW-91/054, June 1991.
10. Technical Guidance Document: Quality Assurance and Quality Control for Waste Containment Facilities, EPA/600/R-93/182.
11. Report of Workshop on Geosynthetic Clay Liners, EPA/600/R-93/171.
12. Proceedings of the Workshop on Geomembrane Seaming Data Acquisition and Control, EPA/600/R-93/112.
13. The Hydrologic Evaluation of Landfill Performance (HELP) Model Engineering Documentation for Version 3, EPA/600/R-94/168b.

Shoreline Armoring Guidance Documents

1. Shore Protection Manual, Vol I: Coastal Engineering Research Center, Department of the Army Waterways Experiment Station, Corps of Engineers, US Army Corps of Engineers
2. Engineering and Design: Design of Coastal Revetments, Seawalls, and Bulkheads
3. Construction with Large Stone: Engineering and Design, EM1110-2-2302, Oct 24, 1990, US Army Corps of Engineers
4. Earth and Rock Fill Dams General Design and Construction Considerations, Engineering and Design, EM 1110-2-230, May 10, 1983, Department of the Army, Corps of Engineers, Office of the Chief of Engineers
5. Design of Riprap Revetments for Protection Against Wave Attack, John P. Ahrens: Technical Paper No. 81-5, December 1981 US Army Corps of Engineers Coastal Engineering Research Center, Ft Belvoir, VA.
6. Coastal Littoral Transport, Engineering and Design: EM 1110-2-1502, August 20, 1992, US Army Corps of Engineers
7. Water Levels and Wave Heights for Coastal Engineering Design: Engineering and Design, EM-1110-2-1414, July 7, 1989, US Army Corps of Engineers

[Other guidance may be referenced in the Consent Decree that are not listed above (i.e., QA Guidance, Sample and Data Analysis, etc.)]

ATTACHMENT 1

Remediation Milestone Schedule

| Milestone | Required Completion Date |
|---------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| Nearshore/Offshore Sediment Sand/Silt Cap (approx. 10.5 acres) | One year from Effective Date of Second Amendment |
| Cap Slag Peninsula | Prior to EPA Certification of the First Phase (October 30, 2008) |
| Construction of temporary site cap | Prior to EPA Certification of the First Phase (October 30, 2008) |
| Excavation of shallow sediments in Yacht Basin per SOW requirements | Prior to EPA Certification of the Second Phase (No later than November 15, 2009) |
| Site Cap 50% complete | Four years from Effective Date of Second Amendment |
| Complete Site Cap | Seven years from Effective Date of Second Amendment |
| Complete Sediment Cap | Seven years from Effective Date of Second Amendment or Financial Assurance in lieu of completion |